



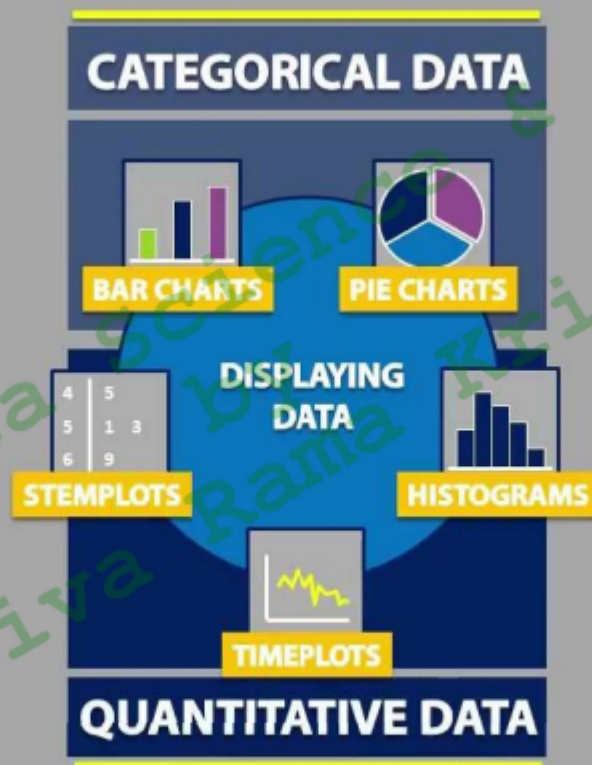
## Populations and Samples

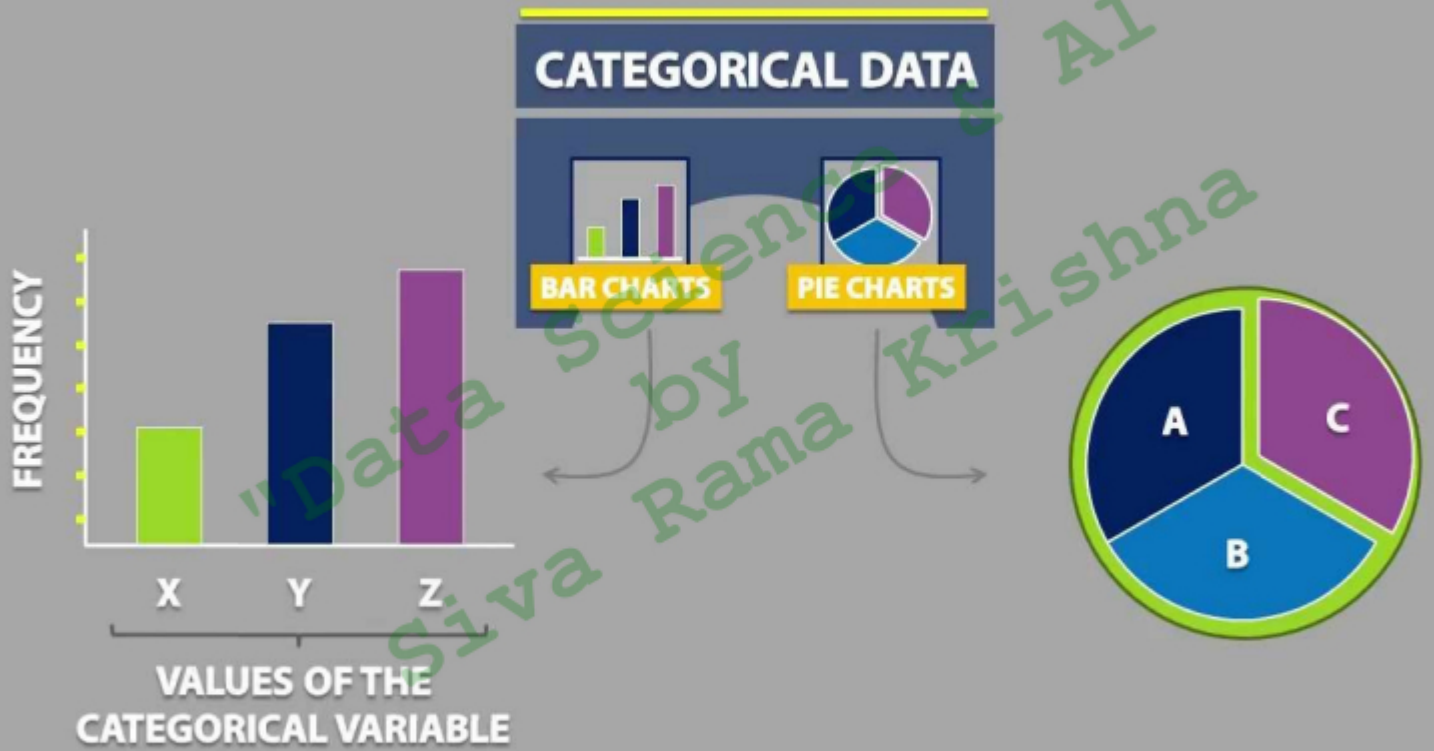
- A **Population** is the set of all items or individuals of interest
  - Examples:
    - All likely voters in the next election
    - All parts produced today
    - All sales receipts for November
- A **Sample** is a subset of the population
  - Examples:
    - 1000 voters selected at random for interview
    - A few parts selected for destructive testing
    - Random receipts selected for audit



## Why Sample?

- Less time consuming than a census
- Less costly to administer than a census
- It is possible to obtain statistical results of a sufficiently high precision based on samples.
- Because the research process is sometimes destructive, the sample can save product
- If accessing the population is impossible; sampling is the only option



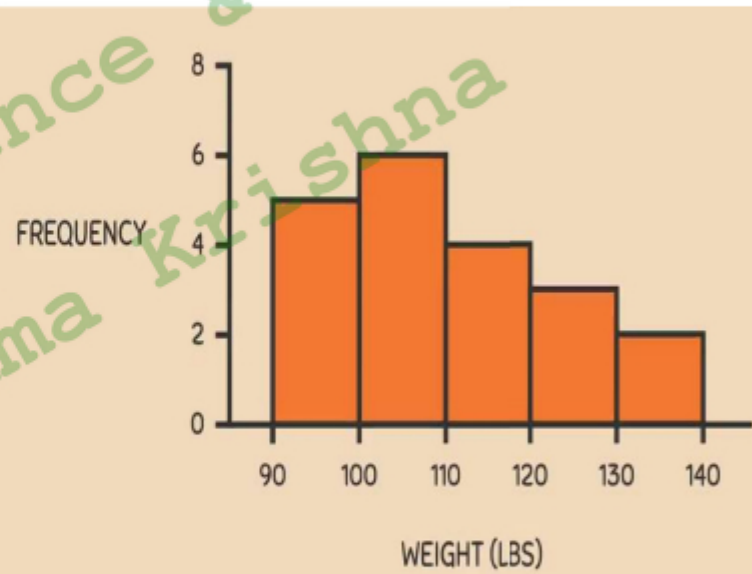




90 lbs 100 lbs 108 lbs 99 lbs 101 lbs 130 lbs 110 lbs 138 lbs 129 lbs 96 lbs



100 lbs 110 lbs 92 lbs 109 lbs 115 lbs 120 lbs 91 lbs 119 lbs 106 lbs 125 lbs





# FREQUENCY DISTRIBUTION



120 lbs

## WEIGHT

100 – 110

110 – 120

120 – 130

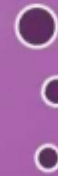
130 – 140

140 – 150

120

130

**BY CONVENTION, WE SAY THAT  
EACH INTERVAL DOES NOT  
INCLUDE THE RIGHT END POINT**





# TIMEPLOT

SHOW HOW A VARIABLE CHANGES OVERTIME

"Data Science & AI"  
Siva Rana Krishna



# TIMEPLOT

SHOW HOW A VARIABLE CHANGES OVER TIME

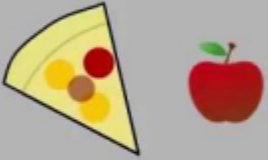






## VARIABILITY

### FOOD PREFERENCES



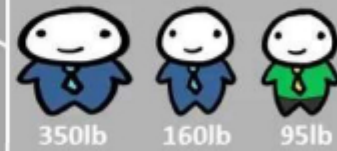
### HAIR COLOUR



### HEIGHT



### WEIGHT





# MEASURE VARIABLE

## QUANTITATIVE DATA

DATA THAT IS MEASURED IN NUMBERS. IT DEALS WITH NUMBERS THAT MAKE SENSE TO PERFORM ARITHMETIC CALCULATIONS WITH

## CATEGORICAL DATA

REFERS TO THE VALUES THAT PLACE "THINGS" INTO DIFFERENT GROUPS OR CATEGORIES

## QUANTITATIVE VARIABLES

HEIGHT  
WEIGHT  
MIDTERM SCORE

## CATEGORICAL VARIABLES

HAIR COLOUR  
TYPE OF CAT  
LETTER GRADE



# CATEGORICAL VARIABLE

## CATEGORICAL AND ORDINAL

LOGICAL ORDERING TO THE VALUES OF A CATEGORICAL VARIABLE

**EX: LETTER GRADE**

F C C+ B B+ A A+

## CATEGORICAL AND NOMINAL

NO LOGICAL ORDERING TO THE VALUES OF A CATEGORICAL VARIABLE

**EX: HAIR COLOUR**

RED BLONDE BROWN BLUE



# QUANTITATIVE VARIABLE

## DISCRETE

REFER TO VARIABLES THAT CAN ONLY BE MEASURED IN CERTAIN NUMBERS

**EX:** NUMBER OF PETS YOU OWN

0    1    2    30    2.7

## CONTINUOUS

REFER TO VARIABLES THAT CAN TAKE ON ANY NUMERICAL VALUE

**EX:** WEIGHT

105    185    170.683

